WEATHER ON THE NORTH PACIFIC OCEAN

By WILLIS E. HURD

Atmospheric pressure.—For the eastern part of the North Pacific, two interesting pressure anomalies are noticeable for November. At Honolulu and Midway Island, near and in the stronghold of the usual high-pressure area, the average barometer was below the normal by 0.7 to 2.7 millibars (0.02 to 0.08 inch). At Dutch Harbor, near the heart of the usual low-pressure belt, the average barometer was above the normal by 9.6 millibars (0.28 inch). The Aleutian LOW center this month lay in the Gulf of Alaska region, the mean pressure at Juneau being 1,006.5 millibars (29.73 inches). From this point along the cost to Mazatlan, the November barometer was close to normal. The lowest determinable pressure of the month was 966 millibars (28.53 inches), read at St. Paul Island on the 16th.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Pacific Ocean and its shores, November 1941*

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	*Millibars*	*Millibars*		*Millibars*	
Barrow	1,016.1	+0.5	1,032	6, 27	987	30
Dutch Harbor	1,011.6	+9.6	1,032	27	972	16
St. Paul	1,009.5	+7.5	1,033	26	966	16
Juneau	1,006.8	−1.0	1,030	20	978	13
Tatoosh Island	1,015.9	+1.0	1,034	20	992	13
San Francisco	1,018.3	−.7	1,027	24	1,012	17
Mazatlan	1,011.9	−.3	1,014	8, 14, 29	1,009	5, 20, 21
Honolulu	1,013.9	−2.7	1,019	11	1,010	17
Midway Island	1,017.9	−.7	1,026	30	1,010	23
Guam	1,010.9	−.3	1,020	16	1,007	19

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observations.

Extratropical cyclones and gales.—On the 2d and again on the 16th-17th deep cyclones appeared over the Aleutian Islands. Central pressures were well below 982 millibars (29 inches), and heavy storminess prevailed over a considerable area. Gales of force 9–10 were reported both north and south of the Alaska Peninsula on the 2d, and of force 11 south of the peninsula on the 17th.

For all western waters of the Pacific, reports are negligible to wanting, but for eastern waters, numerous cyclones of varying degrees intensity occurred in the Gulf of Alaska and on parts of the ocean between the Hawaiian Islands and the American mainland north of southern California. In middle latitudes, between about 135° and 150° W., depressions were rather frequent. They were of no great barometric depth, but caused gales of force 8 on several days between the 6th and the 30th. On the 8th and 9th, near 34°–36° N., 145°–148° W., winds of force 9 to 11 were encountered, with barometers no lower than 1,007 millibars (29.74 inches). Farther north, force 8–9 gales occurred on several days, with the highest wind, of force 11, and a low barometer of 977.7 millibars (28.87 inches), observed near 57° N., 139° W. A still lower barometer, 28.62 inches (uncorrected), was read on a ship in the midst of a force–10 gale, near 49° N., 131° W.

In near coastal waters of the United States there were several days with south to southeasterly gales ranging in force from 8 to 10. On the 2d, of force 8–9, they were mostly experienced off Washington and Oregon. Close in on the southern Oregon coast a force–10 gale was reported on the 13th, and again on the 29th, on which date the barometer dropped to 992.2 millibars (29.30 inches). Off the central California coast a gale on the 28th attained a force of 8.

Tropical disturbances.—At least one tropical cyclone, of moderate intensity, formed in extreme southeastern waters. A ship on November 2 had a southeast wind of force 9, barometer 1,000.7 millibars (29.55 inches), near 15½° N., 108° W. On the 4th a vessel near 17° N., 113° W., had a southeasterly gale of force 8, with nearly as low barometer.

It appears that another small cyclone in low latitudes occurred also on the 3d, since a ship near 7½° N., 89° W., had an east gale of force 9, preceded by north-northeasterly and succeeded in the afternoon by south-southeasterly winds. The barometer fell to 1,004.4 millibars (29.66 inches).

Intensified trade wind.—During much of the 10th a northeast trade wind of force 8 was experienced in the vicinity of 12° N., 149° W.

Tehuantepecers.—Northerly gales in and near the Gulf of Tehuantepec were reported as follows: Of force 8 on the 13th; of force 9 on the 25th, 26th, and 27th; and of force 10 on the 24th.

Fog.—Fog was particularly frequent in near coastal waters of California, where it was reported on 15 days. The greatest concentration was along the middle coast. It was reported on 2 days off Oregon and on 3 days off Lower California. A few scattered fogs occurred well at sea during the first 6 days of the month.

RIVER STAGES AND FLOODS

By BENNETT SWENSON

The interior of the country, following a period of excessive rainfall, was relatively dry during November. However, flooding continued from the previous month in portions of the lower Mississippi and Arkansas River Basins and in the upper Red River Basin. The flooding in the Arkansas River in November reached the highest stage since June 1833 in the reach from Webbers Falls, Okla., to slightly below Van Buren, Ark.

Light to moderate floods occurred in other sections as eastern Texas, Pecos River in Texas, Willamette River in Oregon and in portions of the upper Mississippi Valley.

In the more eastern States, where both September and October were extremely dry, the rainfall in November was much below normal. The river stages in this area, showed little change, remaining well below normal.

Atlantic Slope, East Gulf of Mexico and Ohio River Drainage.—Precipitation during the month was below normal except in Florida and Mississippi. The lack of moisture, which has been prevalent during most of the year, resulted in little changes in the river stages. Some increases in stages occurred from lowered temperatures, particularly in extreme northern sections, but generally the stages were well below normal.

Upper Mississippi Basin.—Heavy rains on October 31 and November 1, resulted in light to moderate flooding at a few points. The Wisconsin River overflowed its banks slightly at Knowlton, Wis., on the 2d and 3d, with a peak stage of 12.9 feet on the 2d. Light flooding occurred also in the lower portions of the Des Moines, Rock and Meramec Rivers during the first week of the month with stages from 1 to 2 feet above flood stage. Flood damage was slight.

A slight overflow occurred in the lower Illinois River at Havana and Beardstown, Ill., from the 4th to the 22d. A rise began in the Mississippi River proper early in the

month from the heavy rains on October 31. Further rains during the first week of November resulted in light overflows from Keokuk, Iowa, to Cape Girardeau, Mo. The gage at Cairo, Ill., showed a mean stage of 24.8 feet during the month, compared with a 60-year normal of 13.4 feet for November.

Missouri River Basin.—The Grand River in Missouri and the Osage River in Missouri and Kansas were in moderate flood during the first few days of November. These floods resulted largely from heavy rains on the last day of October. As greater floods had occurred in these rivers during October, little or no additional damage resulted.

A slight overflow of .9 foot in the Solomon River at Beloit, Kans., on November 20, resulted in no appreciable damage.

The extreme lower Missouri River continued in flood from the previous month. The crest reached 24.6 feet at Hermann, Mo., flood stage 21 feet, on November 4, and the river crested at 30.6 feet at St. Charles, Mo., flood stage 25 feet, on November 6. Stages about as high or higher had occurred at these points during October.

White River Basin.—Excessive rains during the latter part of October, resulted in moderately high floods, beginning on October 31 in the upper part of the basin at Black Rock and Calico Rock, Ark., and continuing until November 27 at the lowest gaging station, St. Charles, Ark. The total loss has been estimated at $145,000, of which $100,000 was to matured crops.

Arkansas River Basin.—Overflows continued in the tributaries of the Arkansas River in Oklahoma and Kansas from the previous month. The flood in the Arkansas River from the vicinity of Webbers Falls, Okla., to a short distance below Van Buren, Ark., was approaching major proportions at the end of October. The river crested at Webbers Falls on November 1, with a stage of 35.8 feet, and at Fort Smith and Van Buren, Ark., on November 2–3, with stages of 37.3 and 35.8 feet, respectively. These stages are the highest since the flood of June 1833, and exceed the stages in the April 1927 flood. As the flood progressed downstream, it decreased in intensity; at Little Rock, Ark., a crest of 26.3 feet occurred on November 7.

Considerable damage was caused by the high water, the heaviest damage occurring in the Fort Smith area. As complete reports are not available at this time, a further report will be made on damages and other aspects of the flood.

Red River Basin.—Heavy rains late in October, over the extreme upper Red River Basin, resulted in damaging floods in the smaller tributaries in Oklahoma and Texas as reported last month. The discharge from these streams caused the Red River to overflow its banks by 1 to 3 feet at Arthur City, Tex., and Index and Fulton, Ark., during the first week in November.

Lower Mississippi Basin.—Heavy rainfall over the upper St. Francis Basin on October 31, caused rising stages in the St. Francis River. The river reached a stage of 1.9 feet above flood stage at Fisk, Mo., on November 6.

West Gulf of Mexico drainage.—Local overflows occurred in the Trinity, Neches, and Sabine Rivers early in November. Damages estimated at $5,000 were reported in the vicinity of Liberty, Tex., on the Trinity River. No damage was reported along the Neches and Sabine Rivers.

The flood in the Pecos River that began in the irrigation district south of Red Bluff Dam on October 25 continued above flood stage at Pecos, Tex., until November 6. Very little, if any, precipitation occurred during the entire period. The continued heavy flow was produced almost entirely by the steady spilling of water over Red Bluff Dam.

Columbia River Basin.—Moderate flooding occurred in the Willamette River Basin from November 15–18 from heavy precipitation during the period 11–17th. On the night of the 14–15th, an area of approximately 6,640 square miles, received unusually heavy precipitation. The average 24-hour precipitation over this area was well over 3 inches.

The following flood résumé is quoted from a report, Daily and Hourly Precipitation Supplement, Storm of November 11–17, 1941, Weather Bureau, in cooperation with Departments of War and Agriculture, by the Hydrologic Supervisor, Portland, Oreg.:

The area covered by the flood extended from the east side of the Willamette River in the vicinity of Corvallis to slightly above the junction of the Row River with the Coast Fork. This confluence occurs about 2½ miles north of Cottage Grove. Flood control dams under construction on the Coast Fork and Long Tom Rivers were completed to such a stage that they proved their effectiveness as flood barriers. The control of water at these two dams averted serious industrial and agricultural losses in the vicinity of Cottage Grove and Monroe. Extensive riprapping along the Willamette River, constructed by the United States Engineers, materially reduced bank erosion below Eugene. Channel development from the mouth of the Willamette River south to Albany aided considerably in speeding up run-off, thereby reducing flood crests in these reaches of the river. The streams which contributed the greatest volume of flood water were the Middle Fork of the Willamette and the Row River, although the McKenzie, Calapooya and Santiam were very important factors in producing the flood conditions. Maries, Luckiamute, Yamhill, Molalla, Tualatin, and Clackamas Rivers, while contributing some water, could be considered as rather minor factors in this flood.

Although wide distribution was given to accurate and timely warnings, there was considerable damage. Had the flood occurred during the middle of October instead of the middle of November, agricultural losses would have been much more severe. Cover crops played a very important part in limiting soil erosion. Many of the wells in the flooded area were contaminated, which constitutes a potential danger, and it would be almost impossible to estimate the damage. An attempt has been made to classify losses as agricultural (erosion, crops, stock, fences, roads, etc.), industrial (including small businesses) and domestic (damaged household goods, heating plants, loss of foodstuff, etc., including reconditioning). Statistics of cost of rescue work are not available at this time. The estimated flood damages included in this résumé may show some slight alterations when complete data are received.

Agriculture:	
Crops	$7,900.00
Livestock and poultry	4,200.00
Damage to roads and highways	2,500.00
Fences	1,500.00
Erosion	100,000.00
Industrial loss:	
Manufacturing plants and equipment	10,000.00
Loss of business	3,000.00
Auto camps, garages, filling stations	8,000.00
Stores	500.00
Logs	500.00
Domestic:	
Damage and loss of furniture	5,000.00
Food supplies	400.00
Total	143,500.00